EPA Region 5 Records Ctr.
230166



# Weekly Summary Report
# USEPA Oversight, Sauget Area 1, Sauget, IL
# WA No. 239-RSBD-054V / Contract No. 68-W6-0025

**Week Ending Saturday, October 30, 2004**

This report summarizes the Remedial Investigation/Feasibility Study (RI/FS) fieldwork conducted by Monsanto, Solutia and their contractors from October 25 through October 30, 2004 at Sauget Area 1 Sites. The current RI/FS work consists of a dense non-aqueous phase liquid (DNAPL) Characterization and Remediation Study. CH2M HILL provided field oversight of work between October 25 and October 30, 2004.

## Contractors Onsite

Golder Associates (consultant for Monsanto/Solutia)
Groundwater Services Inc. (contractor for Monsanto/Solutia)

## Work Performed This Week

Groundwater Services Inc. (GSI) was onsite during the week conducting the DNAPL and light non-aqueous phase liquid (LNAPL) survey of existing wells and new piezometers at Sauget Area 1. This phase of work is part of Task 5 of the GSI Work Plan for the DNAPL Characterization and Remediation Study. Additionally, NAPL recovery tests and analysis, Task 5 of GSI Work Plan, were performed later in the week at three wells where non-aqueous phase liquid (NAPL) was observed.

### NAPL Survey at Existing Wells

Eighteen new piezometers (A1-01 through A1-18) and four existing monitoring wells (BR-G, BR-H, BR-I, and EE-11), located across Sauget Area 1, were surveyed for DNAPL and LNAPL during the week.

The DNAPL and LNAPL survey consisted of the following measurements at each well:

- An oil-water interface probe was used to measure depth to LNAPL and/or DNAPL, the depth to water, and the total well depth.
- A weighted cotton string was dropped to the bottom of the well, then removed and inspected for evidence of staining (which if present could be indicative of NAPL).
- A Teflon bailer was lowered through the top of the water column present inside the well. The bailer was then raised from the well and inspected for the presence of a sheen or LNAPL.
- A Teflon bailer was lowered to the total depth of the well bailer. The bailer was then retrieved and visually observed for presence of a sheen or DNAPL.

Table 1 shows a comprehensive list of all wells included in the NAPL survey, and the results from wells surveyed through October 30, 2004.

The oil-water interface probe indicated the presence of NAPL at three existing wells (BR-G, BR-I, and EE-11). Staining was evident on the probe at all three wells.

Using the cotton weighted string, staining was evident at two of the three wells (EE-11 and BR-I). Table 1 provides the approximate thickness of NAPL staining. The string at wells BR-I and EE-11 was not completely stained throughout the profile, and the NAPL did not adhere continuously to the string.

NAPL was observed in the Teflon bailer at all three wells (BR-G, BR-I, and EE-11). Observations of the bailer are presented in Table 1. Well EE-11 had NAPL present at the liquid surface. A bailer was not lowered to the bottom of this well since the string test and first bailer test observed NAPL. Purging occurred at each of the these three wells to better characterize the presence, volume, and type of NAPL.

## NAPL Recovery Tests

Three wells (BR-G, BR-I, and EE-11) were purged to begin the recovery test. If NAPL was observed while purging, the following tests were performed to characterize the recovered NAPL:

1. Collection of four one-liter samples and four 10-mL vials of NAPL for:
   a) laboratory analysis of physical properties and chemical composition
   b) bench-scale treatability testing.
2. Field density and viscosity tests.
3. Qualitative observations of wetability by spreading the NAPL over glass beads, gravel, and sand in separate beakers.

LNAPL recovery test?

Recovery tests were only performed at BR-I. While purging wells BR-G and EE-11, no visual evidence of NAPL was observed, and for this reason, recovery testing was not performed on these wells. Water purged from BR-G was collected for laboratory analysis.

→ no sample since LNAPL already sampled

At well BR-I, three one-liter amber bottles were filled approximately 75 percent full and four 10-mL vials were collected and stored in a cooler with ice. The field test for density, using a hydrometer, approximated the specific gravity of DNAPL to be 1.42. Additionally, a dip test was performed for viscosity, resulting in an average of 37 seconds (see photograph). GSI will use the temperature of the DNAPL and time to empty the dip cup to determine the field viscosity. The DNAPL was poured over three beakers filled with gravel, sand, and glass beads to test for wetability. The DNAPL adhered partially to the gravel and glass, with most of the substance migrating to the bottom of the beaker. The DNAPL adhered mostly to the sand, although some of the material migrated to the bottom of the beaker. Pictures of the beakers are provided at the end of this report.

At well BR-G, three one-liter amber bottles were filled with purged water, approximately 75 percent full, and four 10-mL vials were collected and stored in a cooler with ice for off-site laboratory analysis.

# Work Anticipated Next Week

No work is scheduled for next week.

**TABLE 1**
DNAPL Survey of Existing Wells, Oversight of Field Measurements for the week ending October 30, 2004

| Site | Well ID | Date Surveyed | NAPL Observations | Comments |
|---|---|---|---|---|
| Site G | BR-G | 10/26/04 | No LNAPL detected in bailer. Some staining on exterior of bailer.<br>No staining on string. Faint odor.<br>A sheen was noted at bottom of bailer lowered the total depth of well. Faint odor. | Water recovered in Teflon bailer lowered to surface of water and total depth was clear, yet the outside of the Teflon bailer was coated with DNAPL. |
| | A1-14 | 10/27/04 | None detected | |
| | A1-13 | 10/27/04 | None detected | Water recovered from bailer lowered through total depth had silt accumulation. |
| | A1-16 | 10/27/04 | None detected | |
| | EE-11 | 10/26/04 | LNAPL noted in bailer through surface testing.<br>~1 feet NAPL stained on string.<br><0.5 feet NAPL stained on oil/water interface probe. | A bailer was not lowered to the bottom of this well since the string test and first bailer test observed NAPL<br>Depth to NAPL was ~14' BTOC. Total depth of well was ~23' BTOC. |
| Site H | BR-H | 10/26/04 | None detected | This well was re-surveyed on 10/28/04. Again, no evidence of NAPL was found. |
| | A1-01 | 10/26/04 | None detected | |
| | A1-02 | 10/26/04 | None detected | |
| | A1-03 | 10/27/04 | None detected | Well was partially obstructed at ~ 107 ft below top of casing. GSI used a 1" diameter bailer with appropriate weight to reach the bottom of the well. |
| Site I | BR-I | 10/26/04 | No LNAPL detected.<br>~9.33 feet DNAPL stained on weighted string.<br>~2.5 feet DNAPL collected in bailer. | The string was not completely stained throughout the profile, and the NAPL did not adhere continuously to the string. Noticeable odor. |
| | A1-06 | 10/26/04 | None detected. | |
| | A1-07 | 10/26/04 | None detected. | |
| | A1-08 | 10/27/04 | None detected. | Water recovered from bailer lowered through total depth had few suspended solids. |
| | A1-10 | 10/26/04 | None detected. | Water recovered from bailer lowered through total depth had few suspended solids. |
| Non-specific site location | A1-05 | 10/26/04 | None detected. | |
| | A1-09 | 10/26/04 | None detected. | Water recovered from bailer lowered through total depth had few suspended solids. |

**TABLE 1**
DNAPL Survey of Existing Wells, Oversight of Field Measurements for the week ending October 30, 2004

| Site | Well ID | Date Surveyed | NAPL Observations | Comments |
|---|---|---|---|---|
| Non-specific site location (Cont'd) | A1-11 | 10/26/04 | None detected. | Water recovered from bailer lowered through total depth had few suspended solids. |
| | A1-12 | 10/26/04 | None detected. | |
| | A1-15 | 10/26/04 | None detected. | Water recovered from bailer lowered through total depth had few suspended solids. |
| | A1-17 | 10/26/04 | None detected. | Water recovered from bailer lowered through total depth had silt accumulation. |
| | A1-18 | 10/26/04 | None detected. | |
| Site L | A1-04 | 10/26/04 | None detected. | |

**TABLE 2**
Purging Suspected NAPL Wells for the week ending October 30, 2004

| Well ID | Date Surveyed | Time Purged | Volume Purged | NAPL Observations |
|---|---|---|---|---|
| BR-I | 10/27/04 @ 1530 | ~ 30 minutes | 2 gallons | DNAPL, dark brown, petroleum odor |
| BR-I | 10/28/04 @ 1525 | ~ 60 minutes | 3 gallons | DNAPL, dark brown, petroleum odor |
| BR-I | 10/29/04 @ 0810 | ~ 8 hours | 38 gallons | DNAPL, dark brown, petroleum odor[a] |
| BR-G | 10/30/04 @ 0945 | ~ 60 minutes | 40 gallons | No LNAPL or DNAPL was recovered. Light petroleum odor[b] |
| EE-11 | 10/30/04 @ 1320 | ~15 minutes | 2 gallons | LNAPL, light brown, light petroleum odor[c] |

Note:

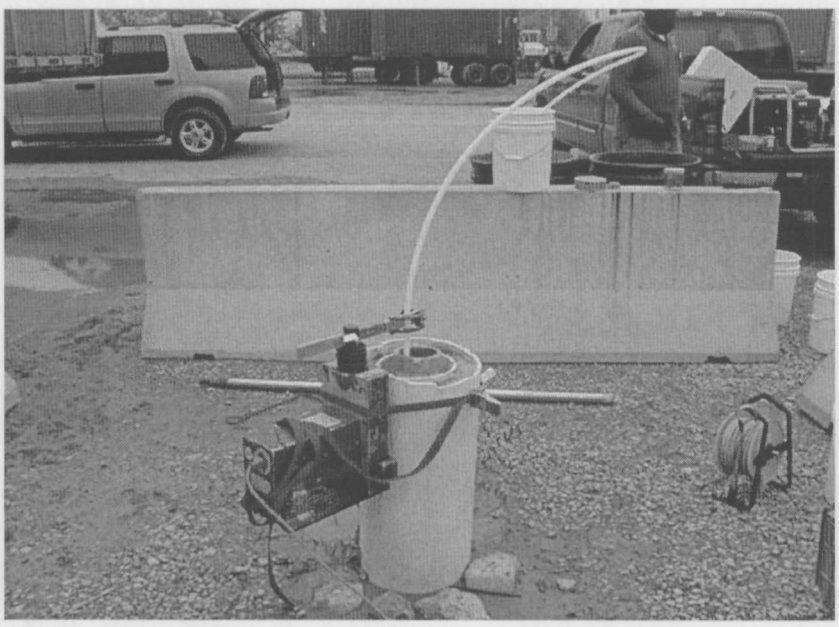
[a] Well was surveyed after well was purged. DNAPL observed on Waterra tubing, Teflon bailer, and weighted string.

[b] Well was surveyed after well was purged . DNAPL was observed on bottom, interior 3' of Waterra tubing, Teflon bailer, and weighted string.

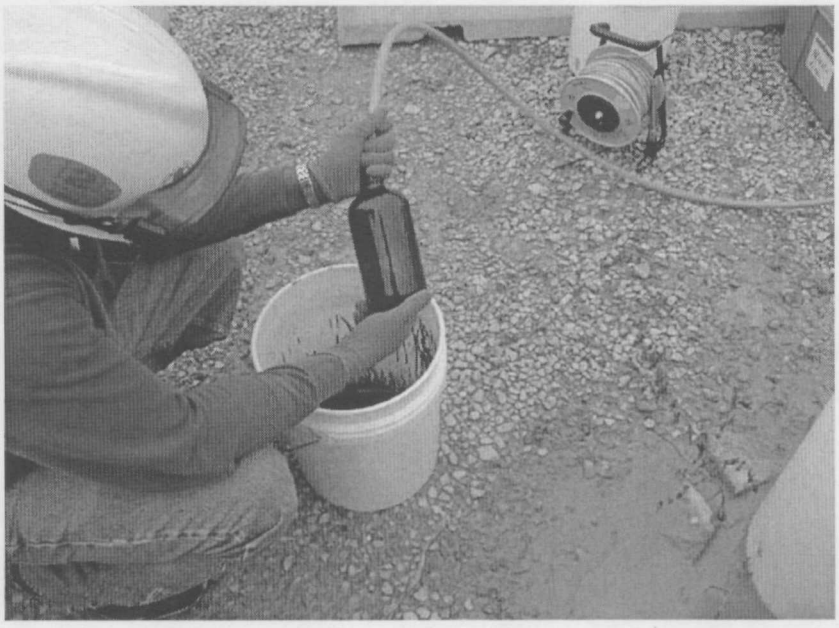
[c] With time, the water recovered and became clear. No evidence of solid layer of NAPL. NAPL observed to be mixed in with water at surface.

## Photos from October 25 through October 30, 2004:

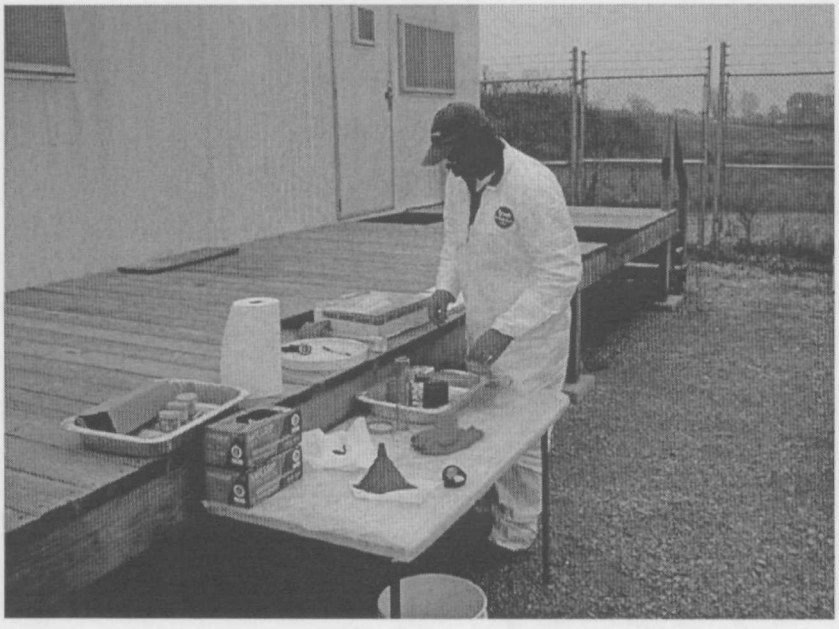
1" Teflon bailer used to survey Well A1-03 (October 27, 2004).



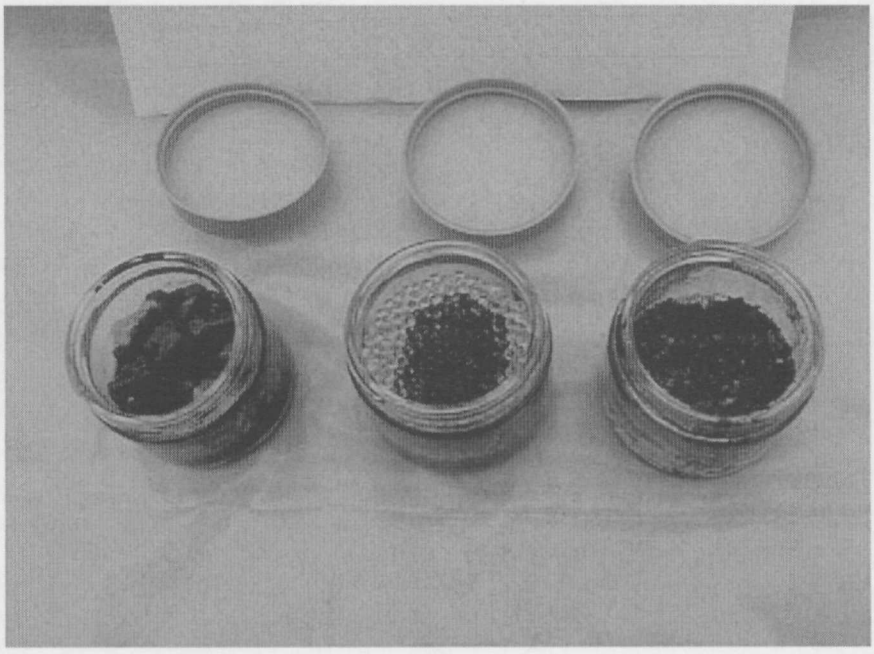
View of purging Well BR-1 on Cerro property (October 27, 2004).



View of GSI collecting DNAPL 1-Liter sample from Well BR-I (October 27, 2004).

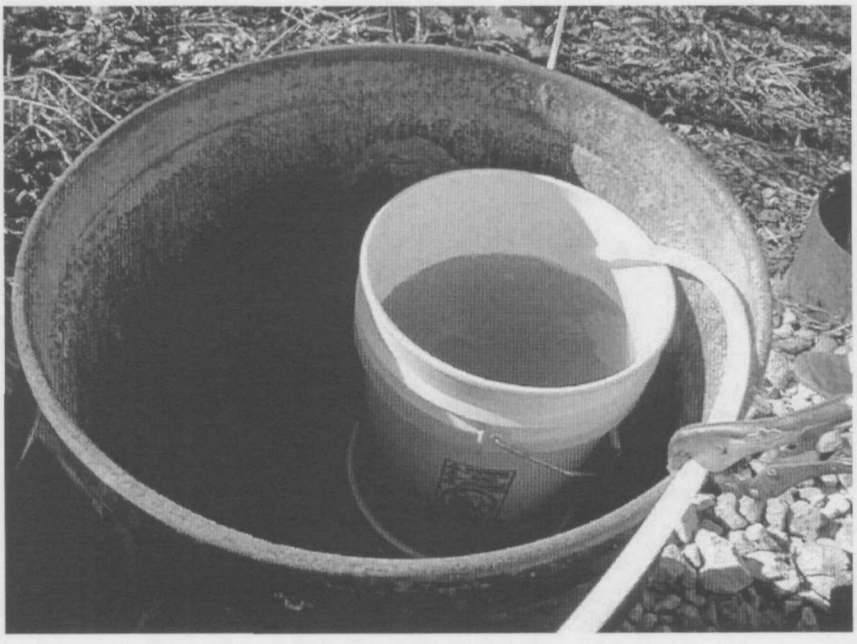


GSI performing recovery test on DNAPL recovered from BR-I (October 28, 2004).

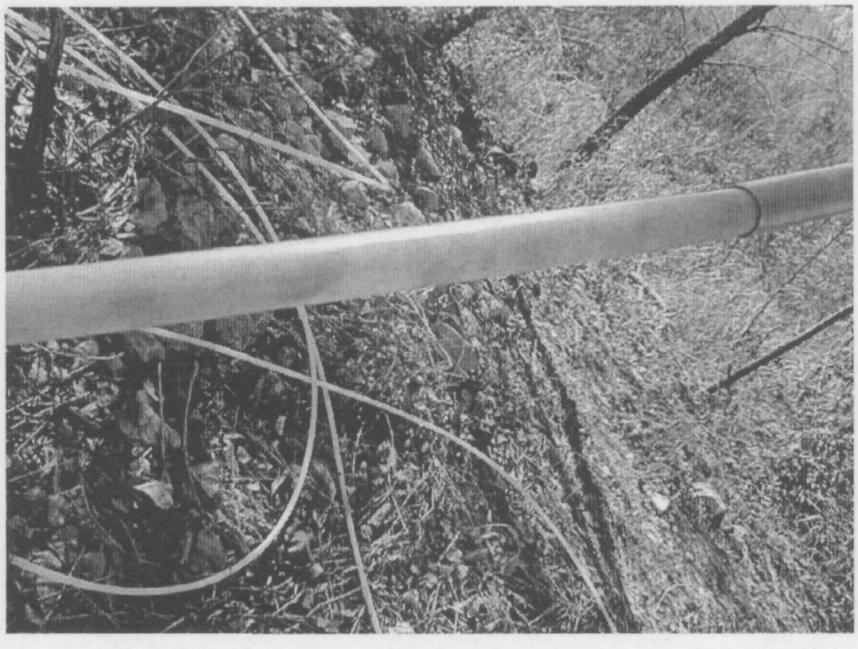


DNAPL was poured over gravel containing gravel, glass beads, and sand at Well BR-I on October 28, 2004.

View of DNAPL being discharged from Well BR-I. Well was pumped for 8 hours. (October 29, 2004).



View of purged water from Well BR-G. No NAPL recovered from the 40 gallons pumped (October 30, 2004).



View of DNAPL on bottom, interior 3' of Waterra tubing used to purge from Well BR-G. No NAPL was recovered from well (October 30, 2004).

View of DNAPL observed on interior and exterior of Teflon bailer used to survey Well BR-G after well had been purged for 60 minutes (October 30, 2004).